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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,973	05/23/2001	Robert J. Gartside	1094-7	1411

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EXAMINER

DANG, THUAN D

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,973

Applicant(s)

GARTSIDE ET AL.

Examiner

Thuan D. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 1 and step d of claim 20, applicants claim an **unspecified** amount of activity-affecting impurity which is **decided** by “conversion loss per hour” of the isomerization reaction, namely the “isomerization of 1-butene to 2-butene”. However, it is well-known that a chemical reaction is **depended on** selected parameters such as temperature, pressure, catalyst, conversion, purity of the feed and so on. In other words, a chemical reaction must be **defined** by these parameters. Similarly, the activity of the catalyst also **depends on** these parameters of a chemical reaction. In the claims, applicants do not claim what the temperature, pressure, conversion, the purity of the feed and so on of the isomerization, namely the isomerization of 1-butene to 2-butene, are. One having ordinary skill in the art cannot identify from the claimed process which isomerization process under a specific condition of temperature, pressure, conversion, namely isomerization of 1-butene to 2-butene is used as the measurement unit of the conversion loss. Therefore, claims lack enablement.

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Claims 20-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Nowhere in the specification disclose a process as called for in newly amended claims 20-23, and newly added claims 24-36 (see the entire specification for details), specifically, the term "consisting essentially of".

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 20, it is unclear which material is considered as "activity-affecting impurity, such as the binders, the catalytic material or undesired materials contained in the catalyst. Applicants are suggested to amend the claim by reciting these materials to overcome this rejection.

Also regarding claims 1 and 20, the term "that amount" on line 7 of claim 1, and line 5 of step d of claim 20 is indefinite since it is unclear how much this amount is, such as zero %. If so, it is unclear how to decide the amount of the impurities of the catalyst is actually used in the claimed process.

It is unclear if claim 12 should depend on claim 10 or 11.

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Regarding claims 13 and 14, it is unclear "the olefin isomerization conditions" is applied to the claimed isomerization process or to "the isomerization of 1-butene to 2-butene".

Claim 16 is non-sense since claim 1 does not recite the presence of transition metals.

Regarding claim 20, "the C4 stream" on line 1 of step d is indefinite since it is unclear from which step - step a or c - the stream come.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-19 and 24-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake et al (4,889,840).

Drake discloses a process of isomerization of olefins such as 2-butene and 3-hexene in the presence of a magnesium oxide catalyst which also contains alumina and zirconia (the abstract; col. 7, lines 12-25).

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As discussed in the above 112 rejection (1st and 2nd paragraph), applicants do not claim what the impurities are and how much the amount of these impurities is present in the catalyst which recites the impurity is sulfur, phosphorus and transition metal. Therefore, the applicants' claimed impurities is not distinguishable from the zirconium disclosed by the reference (the abstract).

Note that Drake does not disclose the presence of sulfur, phosphorus, and that the amount of zirconium can be zero. (table 1 on column 3).

In example III, an exam plied process of converting 2-butene to 1-butene. Therefore, one having ordinary skill in the art who isomerizes 3-hexene would expect a product containing 1-hexene.

The temperature of the process can be found on column 5, lines 45-47.

The reference appears to be silent as the conversion of the process (see the entire patent for details). However, it is known that the conversion is a parameter in a chemical process which must be selected to optimize the desired product. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the prior art process by selecting an appropriate conversion since it is expected that using any conversion yield similar results.

Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake et al (4,889,840) in view of Arganbright (5,087,780).

Drake discloses a process as discussed above.

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Drake does not disclose that using a feed containing isobutene, butene -1 and -2, and butadiene which is pretreated to selectively hydrogenate butadiene, hydroisomerization of butene-1 to butene-2 and fractionation of isobutylene. However, Arganbright discloses a process has steps substantially the same to produce a 2-butene stream which may used for feed to an alkylation unit (see the abstract; col. 4, line 51 thru col. 8, the last line).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Drake process by using the 2-butene stream for the isomerization step of Drake to produce more 1-butene to increase the production of butene-1.

Response to Arguments

Applicant's arguments filed on 5/15/03 have been fully considered but they are not persuasive.

The argument that in the present application, the recitation of "conversion loss per hour as measured by the isomerization of 1-butene to 2-butene" is adequately supported by the specification. For example, lines 20-23 of page 7, an olefin isomerization temperature of 300 to 600 degree Celsius is not persuasive since only disclosure of the temperature is not enough. Note that the reaction is defined by not only temperature, but other parameters such as pressure, Space velocity, phase (liquid or gas), conversion, the purity of the feed, and others. Further, this reaction is used as base of a measurement. If the base is unclear, how the measurement of others can be calculated correctly. For example, when somebody says "water boiled at 100 degree Celsius". This statement is incorrect since he must define under which pressure (namely, 1 atm),

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at the location (namely, ground zero of the Earth). Therefore, the rejection 112, 1st paragraph is proper and maintained by the examiner.

The argument that the purpose of a claim is not to explain technology or how it works is correct, but the rejection of unclear “activity-affecting material” is proper since it is unclear which the limit of this term is covered recited in the claim.

The argument that Drake mentions nothing about the importance of catalyst purity or its effect upon the ability of the catalyst to maintain its activity overtime is not persuasive since as discussed above, as discussed in the above 112 rejection (1st and 2nd paragraph), applicants do not claim what the impurities are and how much the amount of these impurities is present in the catalyst which recites the impurity is sulfur, phosphorus and transition metal. Therefore, the applicants’ claimed impurities is not distinguishable from the zirconium disclosed by the reference (the abstract). Note that Drake does not disclose the presence of sulfur, phosphorus, and that the amount of zirconium can be zero (table 1 on column 3).

The argument that Drake teaches the use of sulfates and sulfide (col. 3, lines 54-57). In contrast to this, the presence of these should be minimized is not persuasive since sulfates and sulfides are only one among a long list of precursors of metal for the catalyst. Further, these compounds are converted to oxides in the final catalyst.

The argument that nowhere does this patent indicate the level of purity of the final catalyst is not persuasive since the level of purity of the catalyst is not claimed (see claims).

The argument that nothing in Drake suggests the superior results achieved by applicants’ catalysts is not persuasive since the claimed process is not the exemplified process (compare them). Applicants are reminded that it has been held that objective evidence of non-obviousness

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must be commensurate in scope with the claims. Here the claims were of much broader scope the single composition tested and there was no adequate basis for reasonably concluding that the great number and variety of compositions included in the claims would behave in the same manner as the single tested composition. *In re Lindner*, 457 F2d 506; 173 USPQ 356 (CCPA 1972).

The argument that Arganbright starts with a feed stream containing no isobutylene is not corrected since Arganbright clearly disclose that butene(s). This term covers all of butenes.

The argument that Arganbright does not teach the conversion step of 1-butene to 2-butene is not persuasive (see 2, lines 33-36).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 703-305-2658. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Thuan D. Dang
Primary Examiner
Art Unit 1764

92863973.2nd
July 28, 2003

A handwritten signature in black ink, appearing to be 'Thuan D. Dang', written in a cursive style with a large, sweeping initial 'T'.